MMX A/V Series

MINI MATRIX SWITCHERS FOR VIDEO AND STEREO AUDIO

- Eight models in 4x2 and 6x2 I/O sizes for composite video or S-video with stereo audio
- 150 MHz (-3 dB) video bandwidth, fully loaded
- View I/O mode
- Vertical interval switching
- Quad standard video capability
- Balanced and unbalanced audio switching
- Audio input gain and attenuation
- Audio breakaway
- RS-232 control port
- Rack-mountable enclosure

MMX 42 AV

MMX 62 SVA RCA

The Extron MMX Series of Video and Audio Matrix Switchers are economical, compact switchers designed to suit the needs of small composite video and S-video signal routing applications, such as conference rooms, classrooms, and home theaters. They are ideal for use as either the primary switcher or as a sub-switcher in a larger system.

DESCRIPTION

The Extron **MMX Series** of composite video and S-video matrix switchers with stereo audio (unbalanced or balanced) consists of eight models, in 4x2 and 6x2 I/O sizes, for easy integration into any system design. MMX A/V Series matrix switchers are available with captive screw or RCA audio connections.

The intuitive front panel buttons and LED indicators enable easy control of inputs and outputs for non-technical users. MMX A/V Series matrix switchers can be mounted in standard electronics racks, as well as within a podium, lectern, or other furniture.

Each model offers vertical interval switching, providing seamless transitions when switching between synchronous video sources. The video signal applied to input one is used as a genlock reference. All models are quad standard compatible for use with NTSC 3.58, NTSC 4.43, PAL, and SECAM format video signals. MMX A/V Series matrix switchers can be controlled via the front panel or through RS-232 for use with a third party control system.

FEATURES

- **150 MHz (-3 dB) video bandwidth, fully loaded** – Ensures switching and distribution of video signals without degradation. The ratings are worst case specifications, i.e., the MMX Series provide 150 MHz (-3 dB) at full performance capacity when one input signal drives all outputs.
- **Buffered I/O** – Each input and output is individually buffered to provide maximum performance with virtually no crosstalk.
- **View I/O mode** – Allows users to easily see which individual inputs and outputs are actively connected. Available from the front panel or RS-232 control.

FEATURES (Cont.)

- **Vertical interval switching** – Provides smooth, seamless transitions when switching between synchronous video sources. The video signal applied to input one is used as a genlock reference.
- **Audio input gain and attenuation (adjustable via RS-232)** – Allows users to set the level of audio gain or attenuation for each audio input channel, eliminating noticeable differences when switching between sources.
- **Audio breakaway (adjustable via RS-232)** – Provides the capability to break away an audio signal from its corresponding video signal, allowing the audio channels to be operated as a separate matrix switcher.
- **RS-232 control port** – Using RS-232 serial commands, the unit can be controlled and configured via the included Windows®-based control software, or integrated into third-party control systems. Extron products use the Simple Instruction Set (SIS™) command protocol, a set of basic ASCII code commands that allow for quick and easy programming. The RS-232 port also makes it easy to install firmware updates.
- **Front panel security lockout** – Prevents unauthorized use in non-secure environments.
- **Downloadable firmware updates** – The latest firmware can be conveniently downloaded from the Extron Web site (www.extron.com). Updates for new features and capabilities can be easily upgraded via RS-232.
- **Rack-mountable** – 1U, half rack width metal enclosure can be rack-mounted using an optional rack shelf.
- **External international power supply** – Provides worldwide power compatibility (part # 70-055-01).

MMX A/V Series Matrix Switchers

Model	Input Connectivity	Output Connectivity
MMX 42 AV	Four BNC connectors for composite video Four captive screw connectors for unbalanced or balanced stereo audio	Two BNC connectors for composite video Two captive screw connectors for unbalanced or balanced stereo audio
MMX 42 AV RCA	Four BNC connectors for composite video Eight RCA connectors for unbalanced stereo audio	Two BNC connectors for composite video Four RCA connectors for unbalanced stereo audio
MMX 62 AV	Six BNC connectors for composite video Six captive screw connectors for unbalanced or balanced stereo audio	Two BNC connectors for composite video Two captive screw connectors for unbalanced or balanced stereo audio
MMX 62 AV RCA	Six BNC connectors for composite video Twelve RCA connectors for unbalanced stereo audio	Two BNC connectors for composite video Four RCA connectors for unbalanced stereo audio
MMX 42 SVA	Four 4-pin mini DIN connectors for S-video Four captive screw connectors for unbalanced or balanced stereo audio	Two 4-pin mini DIN connectors for S-video Two captive screw connectors for unbalanced or balanced stereo audio
MMX 42 SVA RCA	Four 4-pin mini DIN connectors for S-video Eight RCA connectors for unbalanced stereo audio	Two 4-pin mini DIN connectors for S-video Four RCA connectors for unbalanced stereo audio
MMX 62 SVA	Six 4-pin mini DIN connectors for S-video Six captive screw connectors for unbalanced or balanced stereo audio	Two 4-pin mini DIN connectors for S-video Two captive screw connectors for unbalanced or balanced stereo audio
MMX 62 SVA RCA	Six 4-pin mini DIN connectors for S-video Twelve RCA connectors for unbalanced stereo audio	Two 4-pin mini DIN connectors for S-video Four RCA connectors for unbalanced stereo audio

VIDEO

Routing
- MMX 42 Series ..... 4 x 2 matrix
- MMX 62 Series ..... 6 x 2 matrix

Gain ..... Unity
Bandwidth ..... 150 MHz (-3 dB), fully loaded
0 - 10 MHz : no more than 0.1 dB to -0.1 dB
0 - 30 MHz : no more than 0.5 dB to -0.5 dB
Phase between I/Os ..... <1.28˚ at 3.58 MHz
Differential phase error ..... 0.1˚ at 3.58 MHz and 4.43 MHz
Differential gain error ..... 0.1% at 3.58 MHz and 4.43 MHz
Max. propagation of delay ..... 5 ns typical (±1 ns)
Crosstalk ..... -50 dB @ 5 MHz
Switching speed ..... 200 ns (max.)

VIDEO INPUT

Number/signal type
- MMX 42/MMX 62 composite video models ..... 4 or 6 composite video
- MMX 42/MMX 62 S-video models ..... 4 or 6 S-video

Connectors
- MMX 42/MMX 62 composite video models ..... 4 or 6 female BNC
- MMX 42/MMX 62 S-video models ..... 4 or 6 female 4-pin mini DIN

Nominal level ..... 1 Vp-p for Y of S-video, and for composite video 0.3 Vp-p for C of S-video
Minimum/maximum levels ..... Analog: 0.5 V to 2.0 Vp-p with no offset
Impedance ..... 75 ohms
Return loss ..... <-30 dB @ 5 MHz
DC offset (max. allowable) ..... 1.5 V

VIDEO OUTPUT

Number/signal type
- MMX 42/MMX 62 composite video models ..... 2 composite video
- MMX 42/MMX 62 S-video models ..... 2 S-video

Connectors
- MMX 42/MMX 62 composite video models ..... 2 female BNC
- MMX 42/MMX 62 S-video models .. 2 female 4-pin mini DIN

Nominal level ..... 1 Vp-p for Y of S-video, and for composite video
0.3 Vp-p for C of S-video
Minimum/maximum levels ..... 0 V to 2.0 Vp-p
Impedance ..... 75 ohms
Return loss ..... -30 dB @ 5 MHz
DC offset ..... ±5 mV maximum with input at 0 offset
Switching type ..... Vertical interval
Sync Standards ..... NTSC 3.58, NTSC 4.43, PAL, SECAM

AUDIO

Audio Routing
- MMX 42 Series ..... 4 x 2 stereo matrix
- MMX 62 Series ..... 6 x 2 stereo matrix

Gain
- Captive screw models ..... Unbalanced output: -6 dB
  Balanced output: 0 dB
- RCA connector models ..... Unbalanced output: 0 dB

Frequency response ..... 20 Hz to 20 kHz, ±0.05 dB
THD + Noise ..... 0.03% @ 1 kHz at rated nominal level
S/N ..... >90 dB, output 21 dBu, balanced, at maximum output (unweighted)
Crosstalk ..... <-80 dB @ 1 kHz, fully loaded
Stereo channel separation ..... >90 dB @ 1 kHz
CMRR ..... >75 dB @ 20 Hz to 20 kHz

AUDIO INPUT

Number/signal type
- Captive screw models ..... 4 or 6 stereo, balanced/unbalanced
- RCA connector models ..... 4 or 6 stereo, unbalanced

Connectors
- Captive screw models ..... (4 or 6) 3.5 mm captive screw connectors, 5 pole
- RCA connector models ..... 4 or 6 pairs of female RCA connectors

Impedance ..... >10k ohms unbalanced/balanced, DC coupled
Nominal level ..... -10 dBV (316 mV)
Maximum level ..... +19.5 dBu, (balanced or unbalanced) at 1%THD+N
Input gain adjustment ..... -18 dB to +24 dB, adjustable per input via RS-232 only

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV 2 dBu

AUDIO OUTPUT

Number/signal type
- Captive screw models ..... 2 stereo, balanced/unbalanced
- RCA connector models ..... 2 stereo, unbalanced

Connectors
- Captive screw models ..... (2) 3.5 mm captive screw connectors, 5 pole
- RCA connector models ..... 2 pairs of female RCA connectors

Impedance ..... 50 ohms unbalanced, 100 ohms balanced
Gain error ..... ±0.1 dB channel to channel
Maximum level (Hi-Z) ..... >+21 dBu, balanced or unbalanced at 1%THD+N
Maximum level (600 ohm) ..... >+15 dBm, balanced or unbalanced at 1%THD+N

CONTROL/REMOTE — SWITCHER

Serial control port ..... RS-232, female 3.5 mm captive screw connector, 3 pole
Baud rate and protocol ..... 9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations ..... 1 = TX, 2 = RX, 3 = GND
Program control ..... Extron's control/configuration program for Windows®, Extron's Simple Instruction Set (SIS™)

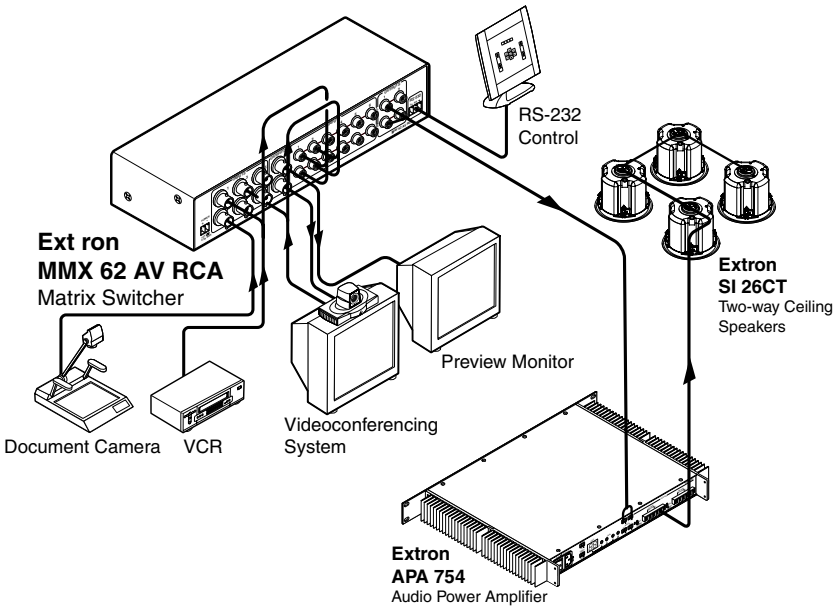
GENERAL

External power supply ..... 100 VAC to 240 VAC, 50/60 Hz, external, autoswitchable; to 12 VDC, 1 A, regulated
Power input requirements ..... 12 VDC, 0.5 A
Rack mount ..... Yes, with optional 1U rack shelf, part #60-190-01 or 60-604-01; or VersaTools® rack shelf, part #60-190-20 or 60-604-20
Enclosure type ..... Metal
Enclosure dimensions ..... 1.75" H x 8.75" W x 3.0" D (1U high, half rack wide) 4.4 cm H x 22.2 cm W x 7.6 cm D (Depth excludes connectors.)
Product weight ..... 4.0 lbs (1.8 kg)
Shipping weight ..... 5 lbs (3 kg)
Vibration ..... ISTA 1A in carton (International Safe Transit Association)
Listings ..... UL, CUL
Compliances ..... CE, FCC Class A , VCCI, AS/NZS, ICES
MTBF ..... 30,000 hours
Warranty ..... 3 years parts and labor

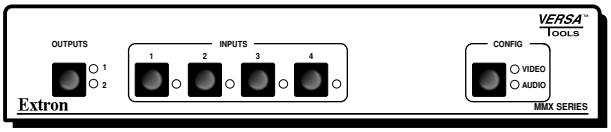
NOTE: All nominal levels are at ±10%.

Model	Version Description	Part Number
MMX 42 AV	4x2 Composite Video & Stereo Audio	60-556-21
MMX 42 AV RCA	4x2 Composite Video & Stereo Audio (RCA) ..	60-556-31
MMX 62 AV	6x2 Composite Video & Stereo Audio	60-557-21
MMX 62 AV RCA	6x2 Composite Video & Stereo Audio (RCA) ..	60-557-31
MMX 42 SVA	4x2 S-Video & Stereo Audio	60-556-22
MMX 42 SVA RCA	4x2 S-Video & Stereo Audio (RCA)	60-556-32
MMX 62 SVA	6x2 S-Video & Stereo Audio	60-557-22
MMX 62 SVA RCA	6x2 S-Video & Stereo Audio (RCA)	60-557-32

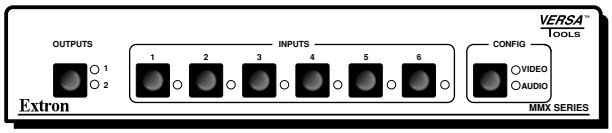
APPLICATION DIAGRAM



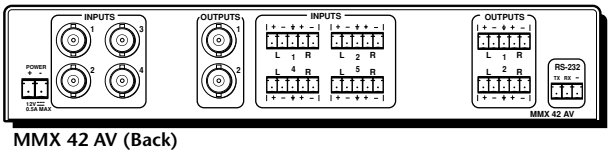
PANEL DRAWINGS



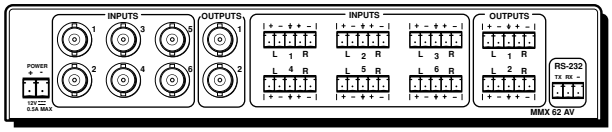
MMX 42 Series (Front for all four input models)



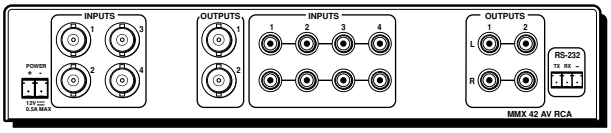
MMX 62 AV Series (Front for all six input models)



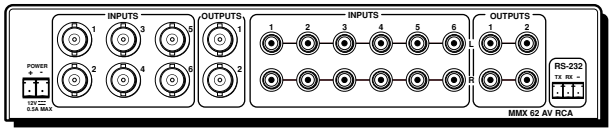
MMX 42 AV (Back)



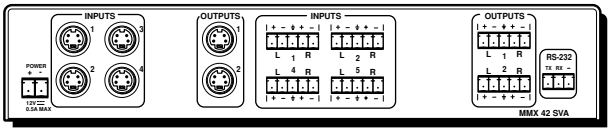
MMX 62 AV (Back)



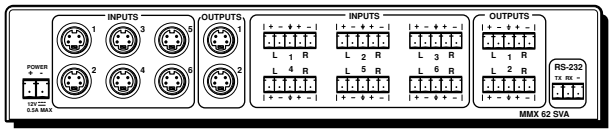
MMX 42 AV RCA (Back)



MMX 62 AV RCA (Back)



MMX 42 SVA (Back)



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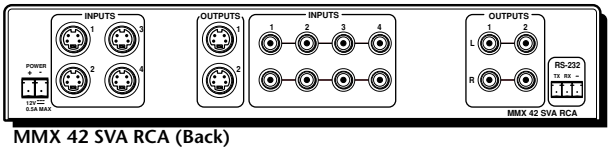
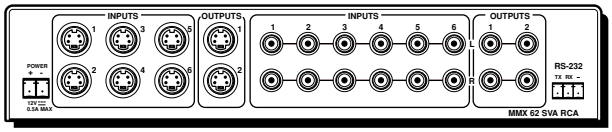


MMX 42 SVA RCA (Back)



MMX 62 SVA RCA (Back)

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